

REMARKS

Claims 1-7 are pending in this application. No new matter has been added by way of the above amendments. For instance, claims 1 and 6 have been amended to indicate that ammonia is produced within the flow passage as supported by the present specification at page 8, lines 3-5 and page 11, lines 7-9 as examples. Additionally, the "heating means" in claim 1 as well and the "heater" in claim 6 have been clearly identified as heating the urea water in the flow passage as supported by originally filed claim 1. The "flow passage" has been amended to indicate that both urea water and air flow therethrough and that ammonia is generated therein as supported by the present specification at page 4, line 22 to page 5, line 2 as well as at page 7, lines 9-13 and page 11, lines 2-7. Accordingly, no new matter has been added.

Applicants further submit that no new issues have been raised which would require additional search and/or consideration on the part of the Examiner. In the event that the present submission does not place the application into condition for allowance, entry thereof is requested as placing the application into better form for appeal.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Issues Under 35 U.S.C. § 112, First Paragraph

The Examiner has rejected claims 2-3 under 35 U.S.C. §112, first paragraph for the reasons recited at page 2 of the outstanding Office Action. Applicants respectfully traverse this rejection.

The Examiner asserts there is no written description for the recitation of "the heating means is provided both inside and outside of the helical part" in claim 3 or for the recitation of "the heating means is provided outside of the helical part" in claim 4. Apparently, this rejection should be directed to claims 3 and 4, rather than claims 2 and 3 as asserted by the Examiner. Regardless, Applicants disagree with the Examiner.

Applicants draw the Examiner's attention to page 6, lines 1-5, especially lines 1-2 of the present specification, wherein it is disclosed that "[i]n addition, the heating means may be provided either outside the helical part or both inside and outside thereof." Language based upon this quotation was filed as new claims 3 and 4 in the June 9, 2004 Amendment. When Applicants

filed the June 9, 2004 Amendment, they referenced this location of support for claims 3 and 4 (please refer to page 5, lines 8-9 of the June 9, 2004 Amendment).

Accordingly, Applicants submit that the Examiner's rejection is improper. Literal support exists in the present specification for the subject matter of claims 3 and 4 as indicated above. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Issues Under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 2-3 under 35 U.S.C. § 112, second paragraph for the reasons recited at page 2 of the outstanding Office Action. Applicants respectfully traverse this rejection.

The Examiner has rejected the recitation of "the heating means is provided both inside and outside of the helical part" in claim 3 and the recitation of "the heating means is provided outside of the helical part" in claim 4. Similar to the above rejection, Applicants believe that this rejection should be directed to claims 3 and 4, rather than claims 2 and 3. Regardless, Applicants submit that the Examiner's rejection is incorrect.

Applicants submit that the rejected claim language is both definite and accurate. Claim 3 recites that the heating means as provided both inside and outside of the helical part. Thus, in addition to the heating means being provided inside of the helical part, the heating means is at the same time provided outside of the helical part. Concerning claim 4, the heating means is provided outside of the helical part. Applicants respectfully submit that those of skill in the art readily understand the metes and bounds of such subject matter. In fact, at page 3, last two lines to page 4, first three lines of the present Office Action, the Examiner alleges that the Peter-Hoblyn reference discloses such configurations of the heating means.

Accordingly, Applicants submit that the claims are fully definite and accurate. Reconsideration and withdrawal of this rejection are respectfully respected.

Issues Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-6 under 35 U.S.C. § 103(a) as being obvious over Peter-Hoblyn et al., U.S. Patent 6,361,754 (hereinafter referred to as Peter-Hoblyn '754) in view of Hunt et al., U.S. Patent 5,165,903 (hereinafter referred to as Hunt '903). Applicants respectfully traverse this rejection. The present

claims relate to an ammonia generating apparatus comprising a urea water introducing part, an air supply line connected to the urea water introducing part, a flow passage for urea water and air and a heating means for heating the urea water in the flow passage. The result of this apparatus is the production of ammonia within the flow passage. This ammonia can then be added to combustion exhaust gas as a reducing agent, to reduce NO_x, for instance, nitrogen oxide or nitrogen dioxide, into nitrogen gas and water vapor.

Applicants respectfully submit that neither of the references cited by the Examiner either suggest or disclose the presently claimed subject matter. For instance, neither Peter-Hoblyn '754 nor Hunt '903 provide a flow passage for allowing both urea water and air to flow therethrough.

Peter-Hoblyn '754 discloses a flow passage for urea water to flow therethrough, but as admitted by the Examiner, this reference fails to disclose an air supply line connected to the urea water introducing part. The secondary reference of Hunt '903 discloses an air supply line, but does not disclose a flow passage whereby both urea water and air are conducted. Accordingly, the present claims are neither suggested nor disclosed by the cited references. For this reason alone, the Examiner's rejection is improper and should be withdrawn.

Applicants further point out that there is no motivation to combine the references as suggested by the Examiner. For instance, the present invention and allegedly Peter-Hoblyn '754 generate ammonia from urea water by heating. This ammonia can then be added to combustion exhaust gas as a reducing agent. In its essence, the presently claimed apparatus mixes urea water with air and then heats it to produce ammonia in the flow passage.

Peter-Hoblyn '754 may allegedly desire the generation of ammonia, albeit without the air supply line as discussed above. However, the secondary reference of Hunt '903 and the objectives thereof are quite distinct. Hunt '903 adds urea water and air to the combustion gas itself (as opposed to the present invention and allegedly Peter-Hoblyn '754, wherein urea water is heated to form ammonia, which is then to be added to combustion gas). The distinction is important since it illustrates the reason that one of ordinary skill in the art would not combine Peter-Hoblyn '754 and Hunt '903 as suggested by the Examiner.

In the background section of Hunt '903 it is disclosed that the straight addition of ammonia to combustion gases, either catalytically or non-catalytically, to reduce NO_x, has encountered problems. For instance, refer to column 1, lines 36-49 and column 1, lines 62 to column 2, line 14 of Hunt '903. However, this type

of approach to NO_x reduction, which is discouraged by Hunt '903, is exactly the approach taken by Peter-Hoblyn '754. Therefore, Applicants submit that Hunt '903 "teaches away" from the creation of ammonia, which is the objective of the cited portion of Peter-Hoblyn '754. Thus, one of ordinary skill in the art would not combine these references as suggested by the Examiner.

Based upon the above, Applicants submit that the Examiner has simply selected one aspect of Hunt '903 (utilization of compressed air connected with the urea inlet line), while ignoring other aspects of Hunt '903 (for instance, the teaching concerning the unwanted production of ammonia). This is improper in a rejection under 35 U.S.C. § 103(a).

In fact, the Examiner's incorrect combination of references is exemplified by the Examiner's statement at page 3, lines 14-18 of the outstanding Office Action. The Examiner asserts that "[t]hus, it would have been obvious in view of Hunt to one having ordinary skill to modify the apparatus of Peter-Hoblyn with an air supply line connected with the urea introducing part as taught by Hunt in order to facilitate mixing and deliverance of the urea solution with the flue gas stream." However, the urea solution according to the present apparatus is not mixed with a flue gas stream, rather the urea solution is heated and thus generates ammonia. Hunt '903

"teaches away" from generating ammonia. This is inconsistent with both the present invention and Peter-Hoblyn '754.

For this additional reason, the Examiner's rejection is improper and should be withdrawn. Based upon the above arguments, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-6 based upon Peter-Hoblyn '754 in view of Hunt '903.

The Examiner has also rejected claims 1 and 5-7 under 35 U.S.C. § 103(a) as being obvious over Lagana et al., U.S. Patent 6,093,380 (hereinafter referred to as Lagana '380 in view of Hunt '903. Applicants respectfully traverse.

Similar to the above, neither Lagana '380 nor Hunt '903 suggest or disclose the presently claimed subject matter. In particular, the references fail to suggest or disclose the combination of a flow passage for urea water and air according to the present invention. Accordingly, the Examiner's rejection is improper and should be withdrawn. Further, for the same reasons discussed above, there is no motivation for combining Hunt '903 with Lagana '380. That is, Hunt '903 "teaches away" from the generation of ammonia, which is the objective of Lagana '380 (see Abstract of Lagana '380). Thus, for this additional reason, the Examiner's rejection is improper and should be withdrawn.

In view of the above, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Craig A. McRobbie (Reg. No. 42,874) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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